Space Weather Forecast

Issued on Friday, 21 June 2024 at 13:12 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Further Moderate flares (R1-R2 radio blackouts) expected. Chance of isolated Strong flares (R3 radio blackouts). Chance of S1/Minor radiation storms.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, with the peak flare at 20/2316 UTC from a region in the southeast. There are currently seven sunspot regions on the disc. The largest region is in the southwest, with limited change in the appearance and orientation of its numerous large spots, and any magnetic complexity appearing to fade. Another region in the southwest has paused in its growth, but there is significant magnetic complexity. A region in the northwest is largely unchanged with little apparent alteration in appearance and minor magnetic complexity. These three regions appear stable at this time, with limited flaring observed. The most active flaring region at present in the southeast has seen the main lead and trailer spots separate, with negligible new growth. There are signs of two further regions rotating onto both the northeast and southeast limbs, but with a very limited view at present.
No Earth directed Coronal Mass Ejections (CMEs) have been observed in the past 24 hours.
Solar Wind / Geomagnetic Activity: Solar winds indicated declining fast wind influence. Wind speeds have been slightly elevated, falling from around 480 km/s to near 400 km/s. Interplanetary Magnetic Field was weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 1-2).
Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary
Solar Activity: Further Moderate flares are expected, with a chance of isolated Strong flares, most likely from the three large sunspot regions in the western hemisphere, or regions in the southeast disc.
Solar Wind / Geomagnetic Activity: No Earth-directed CMEs feature in the forecast period, but with lower confidence than usual. Ongoing coronal hole influence should continue to ease on Day 1 (21 Jun) with winds expected to reduce to background levels. A further enhancement from the large coronal hole in the northwest disc is possible on Days 1 and 2 (21 and 22 Jun), however, significant connection to this feature is considered unlikely given its high-latitude location on the disc. If a connection were to be forthcoming, speeds could reach slightly elevated to elevated levels.
Overall mainly Quiet to Unsettled geomagnetic activity is expected. There is a chance of isolated Active intervals, mainly on Days 1 and 2 (21 and 22 Jun), should there be any notable connection to aforementioned large coronal hole.
Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels, but with a chance of exceeding the S1/Minor Storm threshold should any notable flares occur, predominantly from any of the three large spots in the western hemisphere.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	80	80
Very Active	R3 to R5 X	No	25	25	25	25

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	30	30	30	30
Very Active	≥ S3 *	No	5	5	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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